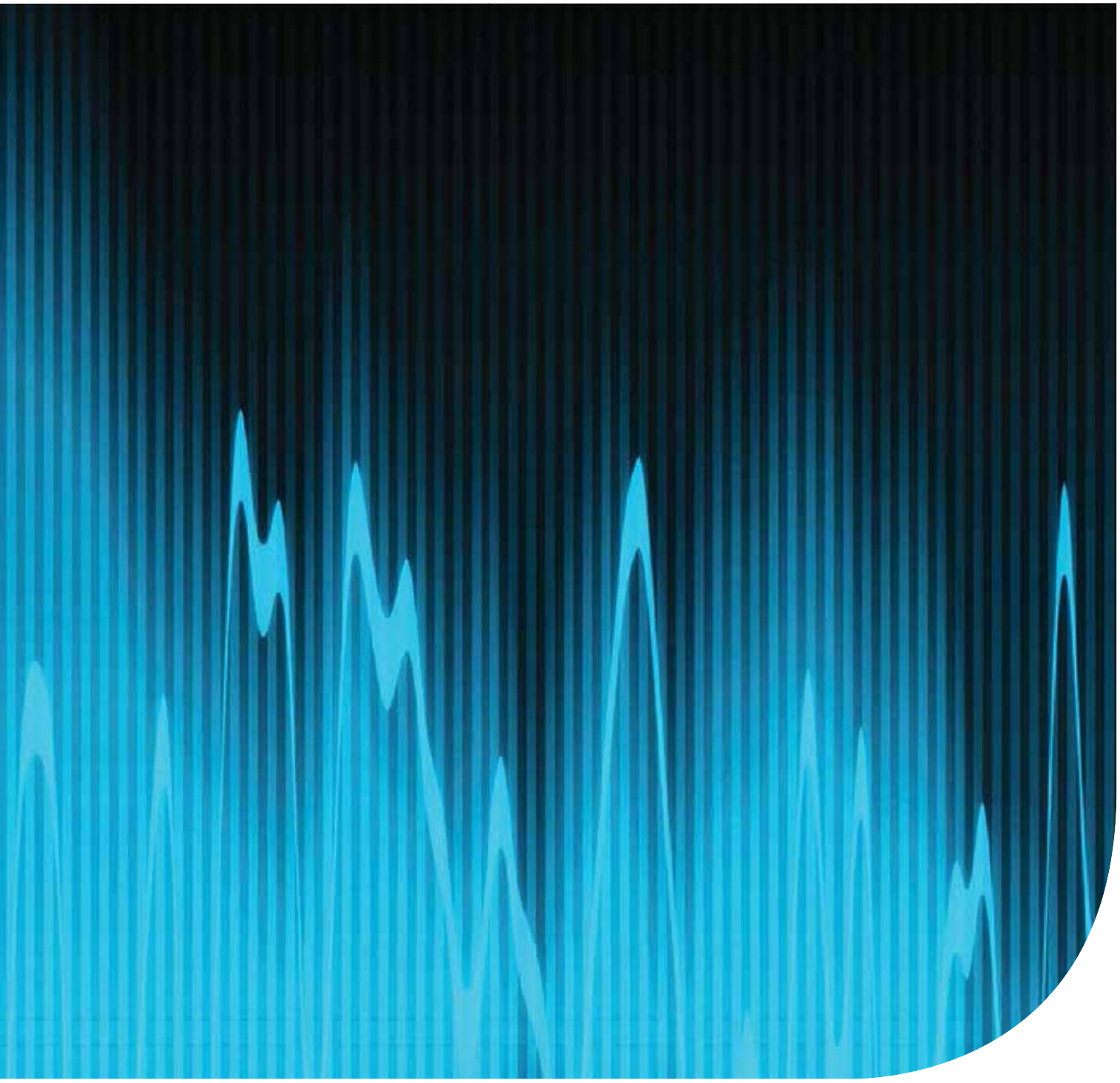
EMGA Mitchell McLennan

Noise assessment

Child care centre | 25-27 Spencer Street, Five Dock NSW

Prepared for Jenny's Early Learning Centre | 7 August 2015



Planning + Environment + Acoustics

Noise assessment

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Noise assessment

Final

Report J15077RP1 | Prepared for Jenny's Early Learning Centre | 7 August 2015

Approved by	**Najah Ishac**
Position	Director
Signature	
Date	7 August 2015

Document Control

Version	Date	Prepared by	Reviewed by
V1	30/07/15	David Sallak	Najah Ishac
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1 Introduction

EMGA Mitchell McLennan Pty Limited (EMM) has been requested to conduct a noise impact assessment for a proposed Child Care Centre (CCC) at 25-27 Spencer Street, Five Dock NSW. The assessment has considered the following:

- the potential noise impact from the proposed development, such as noise from children in outdoor play areas, mechanical plant (e.g. air conditioning) and onsite and offsite road traffic on nearby residential receivers; and
- road traffic noise impact on the facility itself.

The noise assessment has been conducted with reference to the following:

- Canada Bay Council Development Control Plan (SSDCP) 2006;
- NSW Environment Protection Authority (EPA), Industrial Noise Policy (INP) (EPA 2000); and
- Association of Australian Acoustical Consultants (AAAC) "Guideline for Child Care Centre Acoustic Assessment" (September 2010).

This report should be read in conjunction with the architectural plans prepared by DrewHeath Architect appended to this report.

2 Glossary of acoustic terms

Several technical terms are discussed in this report. These are explained in Table 2.1.

Table 2.1 Glossary of acoustic terms

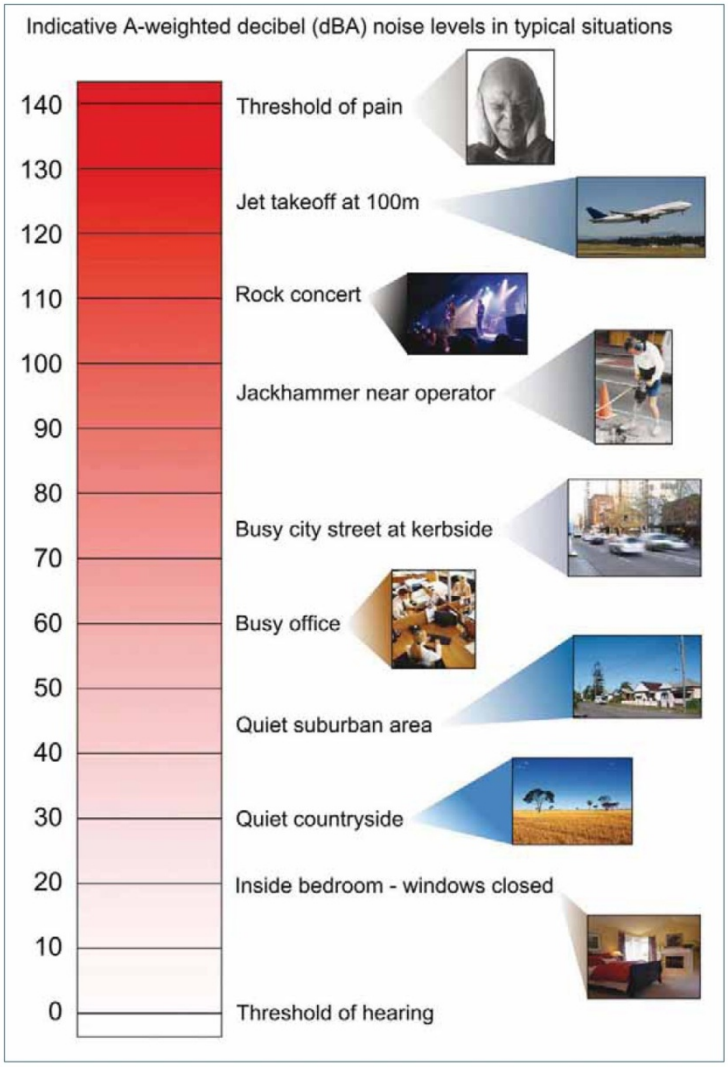
Term	Description
dB(A)	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
L_{90}	Commonly referred to as the background noise level. The noise level exceeded 90% of the time.
L_{eq}	The energy average noise from a source. This is the equivalent continuous sound pressure level over a given period. The $L_{eq(15\ min)}$ descriptor refers to an L_{eq} noise level measured over a 15 minute period.
L_{max}	The maximum root mean squared sound pressure level received during a measuring interval.
Day period	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am - 6 pm.
Evening period	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm - 10 pm.
Night period	Monday – Saturday: 9 pm to 7 am (as per agreement with Department of Planning and Environment), on Sundays and Public Holidays: 10 pm to 8 am.

It is useful to have an appreciation of decibels, the unit of noise measurement. Table 2.2 gives an indication as to what an average person perceives about changes in noise levels.

Table 2.2 Perceived change in noise

Change in sound level (dB)	Perceived change in noise
0-2	Typically not discernable
3	just perceptible
5	noticeable difference
10	twice (or half) as loud
15	large change
20	four times as loud (or quarter) as loud

Examples of common noise levels are provided in Figure 2.1.



Source: Road Noise Policy (Department of Environment, Climate Change and Water (DECCW) 2011)

Figure 2.1 Common noise levels

3 Proposal description

3.1 Site description

The site, 25-27 Spencer Street, Five Dock NSW, is located in an industrial street with no residential properties within the immediate vicinity. The closest residential receiver is located 112m north of the proposed CCC.

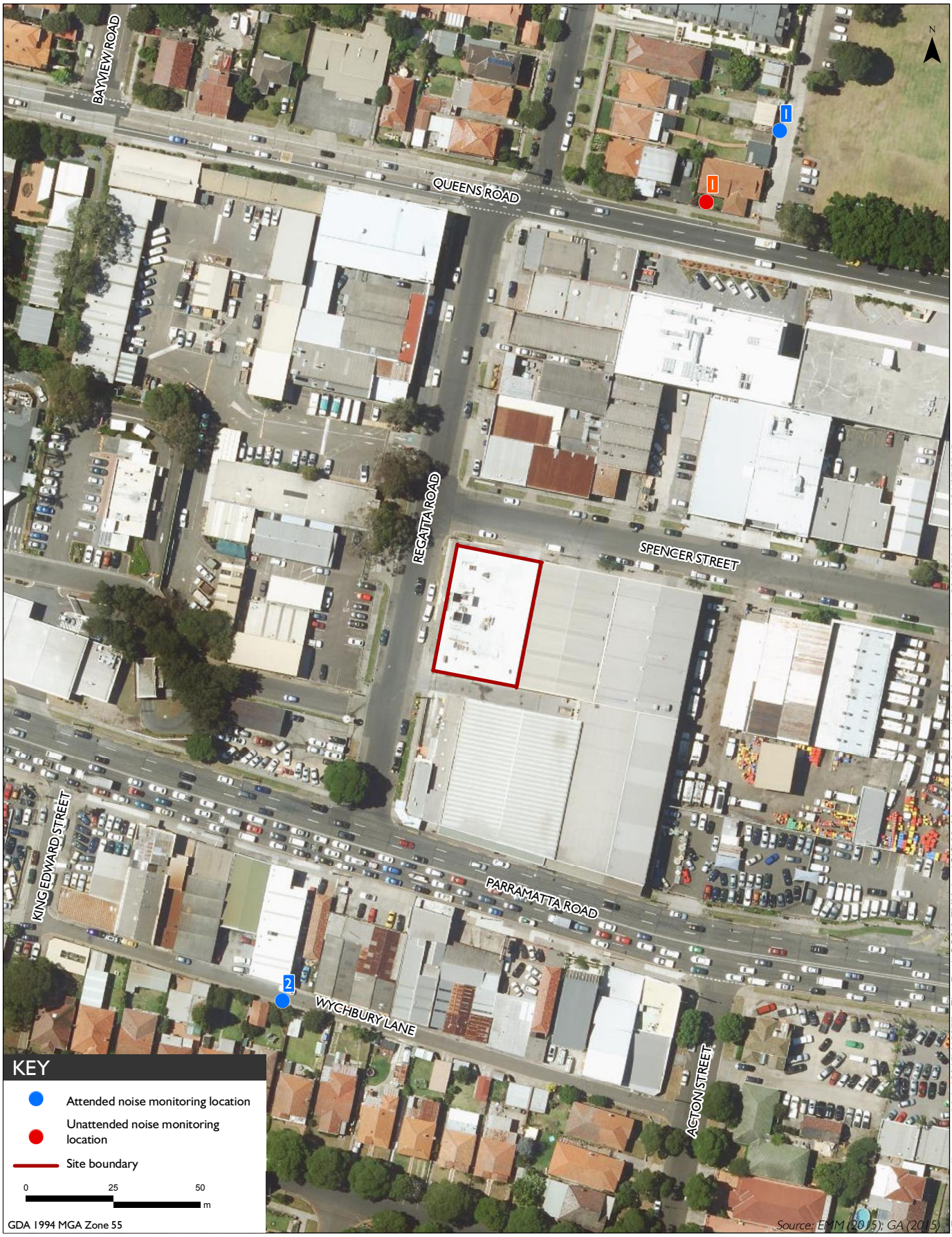
3.2 Development description

The proposal involves the use of an existing two storey building as a child care centre for up to 132 children, with indoor and outdoor children areas as per appended plans. Site plans are provided in Appendix A. An off street car park, with 34 car spaces, is provided in two levels of basement car park. The proposed hours of operation are 6:30 am to 6:30 pm Monday to Friday.

The child care centre seeks to cater for a maximum of 132 children aged between 0 and 6 years with the breakdown in age group as follows:

- 0–1.5 years 26 children
- 1.5–2.5 years 30 children
- 2.5–4 years 36 children
- 4–6 years 40 children

Children's outdoor activities are generally planned with consideration given primarily to sun exposure and age of the children. Outdoor programmes are yet to be finalised, however it is anticipated that outdoor activity times will be limited to 2 hours daily, with varying age groups outside throughout various times of the day. During outdoor play, the children are divided into groups according to age, and on a worst case scenario basis, all age groups may occupy separate external play areas simultaneously.



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Site, noise monitoring and assessment locations

Five Dock Child Care Centre

Figure 3.1

4 Existing acoustic environment

4.1 Assessment locations

The nearest sensitive assessment locations to the proposal are the residences of Regatta Road north of Queens Road Five Dock, approximately 112 m north of the site. Details are provided in Table 4.1**.**

Table 4.1 Assessment locations

Closest assessment location	Address
R1	29 Regatta Road, Five Dock

Where compliance is demonstrated at the receptor listed in Table 4.1, compliance is expected at all other surrounding receptors.

4.2 Unattended and attended noise monitoring

To establish the existing ambient noise environment of the area, unattended noise logging was conducted in the backyard of 14B Regatta Road, Five Dock north of the proposed child care centre site. The location of noise monitoring is representative of the nearest assessment locations and was selected after a detailed inspection of the area giving consideration to other noise sources which may influence the readings, the proximity of noise-sensitive receptors, security issues for the noise monitoring devices and gaining permission for access. The selected monitoring location is shown in Figure 3.1.

The long-term unattended noise survey was conducted in general accordance with the procedures described in Australian Standard AS 1055-1997, “Acoustics - Description and Measurement of Environmental Noise”.

The measurements were carried out using an ARL 316 Type 1 environmental noise logger which was in place from Tuesday 14 to Monday 27 July 2015.

Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5 dB(A). All equipment carried appropriate and current NATA (or manufacturer) calibration certificates.

The results of the unattended noise monitoring are presented graphically in Appendix B and summarised in Table 4.2. Also, Table B.1 of Appendix B shows that the INP minimum seven days of valid samples was achieved once rain days and winds as per the INP were removed. It is noted that although the monitoring spanned two weeks, in order to capture seven valid daytime samples, two Saturdays were used providing a conservative representation of weekday values (when the centre will operate) given Saturday values were generally the same or lower than values on weekdays.

Observations made during the site visit indicated that the noise environment at the unattended logging location included natural noise sources such as birds, traffic noise from Queens Road and Parramatta Road. The daytime period background noise level for the purpose of this assessment is 52 dB(A) which based on our experience is commensurate with a urban locality near busy roads. Attended monitoring at locations shown in Figure 3.1 resulted in comparable noise levels (eg L_{Aeq} 60 dB) at all locations. Noise from existing neighbouring industrial premises was relatively low in comparison to Parramatta Road traffic noise.

Table 4.2 Noise monitoring results – 14 to 27 July 2015

Location	Measured background noise level, RBL, dB(A)				Measured L_{eq}, dB(A)			
	Day 7 am to 6 pm	Evening 6 pm to 10 pm	Night 10 pm to 7 am	[1]Night Shoulder (6.30am to 7am)	Day 7 am to 6 pm	Evening 6 pm to 10 pm	Night 10 pm to 7 am	[1]Night Shoulder (6.30am to 7am)
Regatta Rd, Five Dock	52	48	36	44	60	60	56	58

Note: 1. Derived as the mid pint between day and night RBL as per the INP.

5 Noise goals

5.1 Canada Bay Council DCP 2010

Canada Bay Council's DCP for CCC (Chapter 10, section 10) provides general guidance for noise impacting on a CCC as well as noise from the CCC impacting on surrounding properties.

The DCP states, "*Consideration is to be given to the following design mechanisms in respect to noise abatement for properties in the surrounding area:*

(a) The appropriate design and siting of the Child Care Centre;

(b) The appropriate layout and arrangement of outdoor space and activities;

(c) The location of windows in respect to the location of windows in neighbouring properties;

(d) The appropriate location of outdoor play areas away from main living area or bedroom windows of any surrounding dwellings in predominantly residential area, and away from external noise sources;

(e) The use of acoustic barriers and design, such as screen fencing or planting as noise buffers for external noise sources or transmission of noise from the child care centre to surrounding properties; and

(f) Noise abatement measures are to be undertaken to ensure that inside noise levels do not exceed 40dB(A) (Leq 24)".

5.2 The NSW INP and the AAAC technical guideline

5.2.1 Indoor play, mechanical plant, pick up and drop off

Responsibility for the control of noise emission in New South Wales is vested in Local Government and the EPA. The EPA oversees the INP, released in January 2000, which provides a framework and process for deriving noise criteria. The INP criteria for industrial noise sources (eg mechanical plant), has two components:

1. controlling the intrusive noise impacts for residents and other sensitive receivers in the short term; and

2. maintaining noise level amenity for particular land uses for residents and sensitive receivers in other land uses.

A guideline for the assessment of noise from Child Care Centres has been prepared by the Association of Australian Acoustical Consultants (AAAC) as a result of a NSW Australian Acoustical Society (AAS) Technical Meeting held in September 2007 on Child Care Noise. The document, AAAC Technical Guideline Child Care Centre Noise Assessment, provides criteria for the assessment of noise intrusion into and noise emissions from CCC and also provides recommendations for treatment to minimise acoustical impacts upon neighbouring premises. The guideline aligns with the INP for establishing criteria for child care centres with respect to the following noise sources:

- mechanical plant (such as air conditioning condensers and mechanical ventilation);

- on-site traffic, deliveries and ingress and egress of vehicles;

- off-site drop off/collection areas of children; and
- internal noise emissions from children at play.

i Residential assessment locations

The AAAC residential criteria have been adopted for this assessment. This document is widely used and accepted for the assessment of Child Care Centres.

Project noise criteria for indoor play, mechanical plant and pick up and drop offs at the nearest residential assessment locations are presented in Table 5.1.

Table 5.1 Noise criteria for indoor play, mechanical plant, pick up and drop off for residential assessment locations

Period	Measured background noise, dB(A)	Noise criterion, dB(A) $L_{eq(15\ min)}$
Day	52	57
Night shoulder	44	49

5.2.2 Outdoor play

Since the time in which children are involved in outdoor play is limited, the potential impact associated with these noise emissions is minimised.

The AAAC consider that where the duration in which children are involved in outdoor play is limited to two hours per day, the $L_{eq(15min)}$ noise level emitted from the outdoor play area should not exceed the background noise level by more than 10 dB at any residential assessment location. A “background + 10 dB(A)” criterion has also been applied in other local government areas within the Sydney Metropolitan area, and based on consultation with Council there is precedence for this approach in this jurisdiction given the limitation of operational hours. Alternatively, the more restrictive "background + 5 dB" approach would apply if outdoor play duration exceeded two hours per day.

Table 5.2 Noise criteria for outdoor play at residential assessment locations

Duration	Measured background noise, dB(A)	Noise criterion, dB(A) $L_{eq(15\ min)}$
2 hours or less	52	62
Greater than 2 hours	52	57

5.2.3 Traffic noise

The AAAC child care centre guideline states that traffic noise on local roads generated by vehicles associated with the child care centre arriving and leaving the site (for example vehicles travelling on public roads) shall comply with $L_{eq\text{-}1hr}$ 50 dB(A) at the assessment location.

This issue is not addressed further since existing road traffic volumes and associated noise levels are significantly higher than that which will be generated by the development (eg on Parramatta Road and Queens Road, where residences exist in the vicinity of the site).

5.2.4 Road, rail traffic and industrial noise intrusion to child care centres

The AAAC child care centre guideline also presents recommendations for external noise impact upon children in child care centres as follows:

- The $L_{eq\text{-}1hr}$ intrusive noise level from road, rail or industry at any location within an outdoor play area should not exceed 55 dB(A); and

- The $L_{eq\text{-}1hr}$ intrusive noise level from road, rail or industry within the indoor play or sleeping areas should not exceed 40 dB(A).

For this site road traffic noise intrusion is the only likely source of potential impact.

6 Noise assessment

6.1 Indoor activity noise

6.1.1 Noise from indoor play

It is likely that the proposed CCC will be mechanically ventilated allowing windows to remain closed, if required.

Calculations of noise breakout during play time (ground floor and first floor) from the north facing facade were undertaken. The north facade, in noise breakout terms, is considered the weakest point due to the proposed windows. For the south facade, added noise attenuation is afforded by the corridor and kitchen areas (refer to plans in Appendix A).

Using a worst case reverberant sound pressure level of 75 dB $L_{Aeq,15minute}$, which is based on the Parramatta City Council Child Care Centre DCP requirement for the calculation of internal activity noise (note that this noise level is considered highly unlikely to ever be sustained over any 15 minute period), the predicted $L_{Aeq,15minute}$ noise level at the nearest residential receiver to the north of the CCC (location R1 in Figure 2.1), is $L_{Aeq,15minute}$ 16 dB with the windows open and 0dB with the windows closed (assumes standard 4 mm glazing in standard residential frames).

The recommended daytime assessment criterion of 57 dB(A) can be achieved during both open and closed window scenarios, as can the stricter night shoulder criterion of 49 dB(A).

6.1.2 Noise from mechanical plant

Provision of air-conditioning at the CCC is likely, however has not been confirmed at this stage. Notwithstanding, if provided, the air-conditioning system will likely comprise a package unit or split system. It is recommended that if the package unit or outdoor condenser units are required, that it be located on the east or west side of the proposed CCC (to maximise its distance and barrier effect to the nearest neighbours to the north).

Given the daytime noise criterion of 57 dB $L_{Aeq,15minute}$, typical low-noise condenser units would comfortably achieve this limit at the nearest residence with the implementation of typical engineering noise controls, if required, including judicious equipment selection, placement and screening.

6.1.3 Noise from car parking / site traffic

Noise levels from cars arriving and leaving the site have been assessed. In order to quantify the level of noise that may be received at residential premises to the north of the CCC (at the closest locations on Regatta Road) we have calculated the $L_{Aeq,15minute}$ noise level resulting from a typical number of noise events generally associated with car park and vehicle drop-off/pickup operation (ie cars moving, doors slamming and cars starting). We have adopted a peak hour of 55vph as per the traffic report accessing the car park. The proposed drive through drop off is at least 112 m from the closest residential boundary to the north on Regatta Road, and car parking is in basement levels and hence will not be a contributing noise source.

The predicted $L_{Aeq,15minute}$ noise level due to car park activity is 44 dB at the nearest residential boundary. This level satisfies the daytime and night shoulder criteria of 57 dB and 49 dB respectively. This excludes any shielding afforded by structures at site (refer to Appendix A for plans).

6.1.4 Combined site noise

Predicted combined noise levels from indoor play areas, mechanical plant and onsite traffic movements are presented in Table 6.1.

It is noted that the coincidence of some activities are unlikely, such as staff cars arriving and indoor children at play. However these activities have been assessed together, so the results should be considered conservative. The combined noise levels will comply with relevant AAAC noise criteria.

Table 6.1 Combined indoor noise levels

Assessment location	Predicted noise level, dB(A) $L_{eq(15\ min)}$				Criteria, $L_{eq(15\ min)}$
	Mechanical plant	Indoor play[1]	Onsite traffic	Combined	
R1	<30	16	44	44	49 (night shoulder) 57 (daytime)

Notes: 1. Assumes windows closed.

6.2 Noise from outdoor play areas

Potential noise management issues can occur when children are engaged in outdoor play activities.

Noise generated by the children outside in the play area will occur at limited times throughout the day, with numbers of children playing and periods of play managed by the CCC staff. On a worst case basis, we have assumed all 132 children could occupy the rooftop outdoor play area, being the least shielded outdoor play area from residences.

Average maximum noise levels (L_{A10}) and energy-average noise levels (L_{Aeq}) obtained from measurements of children at play at a similar facility are shown in Table 5.2.

Table 6.2 Outdoor Activity Noise Levels Measured in a Typical Child Care Centre

Noise index	Sound Pressure Level, dB at Octave Band Centre Frequency, Hz								Overall dB(A)
	63	125	250	500	1 k	2 k	4 k	8 k	
L10	64	59	55	56	60	59	51	42	65
Leq	61	58	53	54	57	56	48	41	61

Notes: The above noise levels were measured in an outdoor activities area where approximately 25 children were playing. The children were at distances of between approximately 2 m and 10 m from the microphone.

The noise levels shown in Table 5.2 were increased to account for 132 children playing and used to determine the likely noise levels at the nearest residential premises due to children playing in the outdoor areas of the proposed CCC.

From the results of extensive measurements of noise levels associated with a wide range of vocal efforts and of noise emissions from CCCs, sound power levels will vary over a 15 minute period. Given the Department of Community Services (DOCS) requirements in relation to the management of CCCs, it is expected that the above data would be representative.

i Predicted noise levels

The assessment location adopted for this study is shown in Figure 2.1. The closest existing residential receiver to the north of the site is approximately 112 m from the outdoor play area. Noise from the rooftop outdoor play area will be attenuated by solid parapet on all sides.

Based on the sound power levels provided in the previous section it is estimated that children activity will be 39 dB $L_{Aeq,15\ minute}$ at 112m (the nearest residence).

This satisfies the derived 62 dB $L_{Aeq,15minute}$ daytime noise level criterion for limited play times of up to two hours per day and also satisfies the 57 dB $L_{Aeq,15minute}$ daytime noise level criterion for unlimited play time. This is based on highly conservative emission values which are unlikely to be sustained over a 15 minute period. The actual levels received at any one time will depend on the locations of the children and the activities they are engaged in. Furthermore, the existing ambient L_{eq} and background RBL noise levels as shown from logger data (60 dB and 52 dB respectively during the daytime) will likely mean noise from the children at the CCC will be inaudible at residences.

It is expected with appropriate centre management that actual noise levels would also be controlled to much less than the predictions. It should also be noted that children noise is commensurate with a residential area and that such facilities are there to benefit the local community. This must also be considered when determining such a project.

6.3 Noise management recommendations

Although not essential given the outcomes of the above assessment, good practice recommendations are provided that the CCC could implement in a noise management plan to inform staff of management measures and guidelines to reduce the potential impact from children at play to surrounding receptors. An extract as to management measures that may be incorporated into the plan is reproduced below from the AAAC guideline.

The management plan could consist of the following management measures:

- a separate daily program for both the warmer and cooler months should be established in order to regulate the total time spent outdoors and indoors;
- the program should be made publicly available to parents and neighbours;
- a contact phone number for the centre's director should be made available to neighbours to facilitate communication and to resolve any neighbourhood issues that may arise due to operation of the centre;
- the number of children playing outside at any one time may need to be limited to meet the noise criteria;
- crying children should be taken inside the centre and comforted;
- the behaviour of children should be monitored and modified as required by adequately trained child care workers;
- parents and guardians should be informed of the importance of noise minimisation when entering the site, dropping off or picking up children;

- carers should be educated to control the level of their voice while outside; and
- amplified music may need to be avoided to meet the noise criteria.

6.4 Road traffic noise intrusion

6.4.1 Outdoor play area

The proposed CCC is located on a local street running off Parramatta Road. Existing traffic volumes for Parramatta Road are at up to 2895 vehicles per hour in the AM peak according to the AADT data presented on the RMS website. Based on the Cortn algorithm (suitable for relatively high traffic flows), the calculated peak hour noise level is 55dB $L_{Aeq,1hour}$ for the outdoor play area from existing traffic volumes. This allows for shielding afforded by the building design at the outdoor play areas.

6.4.2 Classrooms

The calculated L_{Aeq} noise levels from existing peak hour traffic from Parramatta Road will be readily attenuated to 40 dB with windows closed with standard 4mm float glass. Air-conditioning should also be provided to allow windows to remain closed, when so desired. Therefore reducing road traffic noise from Parramatta Road to the AAAC internal noise level goal of 40 dB is not considered a risk for the development.

7 Conclusion

EMM has conducted an acoustic assessment of a proposed CCC at 25-27 Spencer Street, Five Dock NSW. The assessment has included acoustical measurements to characterise the ambient noise environment of the area, establishment of noise criteria, and a comparison of predicted noise levels with regard to recommended guidelines.

The assessment has shown that the noise emission from outdoor playground activities to nearby existing residential receivers will under a worst case assessment scenario, satisfy the AAAC recommended daytime $L_{Aeq,15minute}$ criterion. This includes the provision of shielding afforded by the building design as per attached plans. This in combination with appropriate centre management is expected to produce acceptable noise levels during outdoor play times.

It is recommended that windows and doors remain closed during play and sleep times indoors. This may introduce the need for mechanical ventilation (ie air-conditioning) to allow the windows to remain closed when so desired.

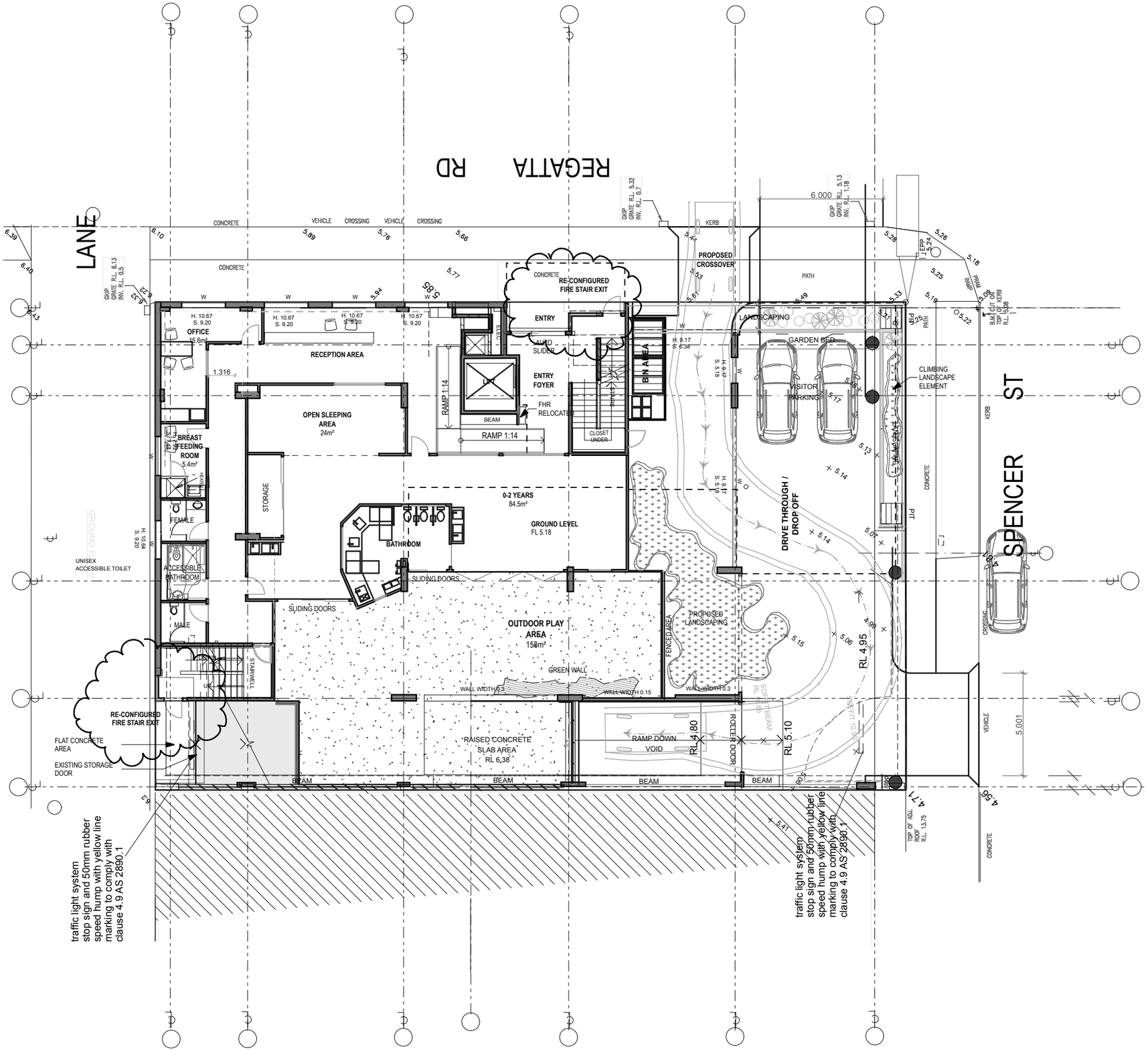
Noise emission from mechanical services can comply with the relevant criteria given separation distances to the nearest sensitive receivers.

The predicted short duration noise levels potentially received at the nearest residential premises due to car parking and vehicle drop-off and pickup activities, when assessed over a peak period, are predicted to satisfy noise criterion derived in accordance with the AAAC guideline.

In conclusion, the proposed development is considered suitable for a CCC operation and is unlikely to adversely impact upon the acoustical amenity of surrounding residents, given the proposed design.

Appendix A

Site plans



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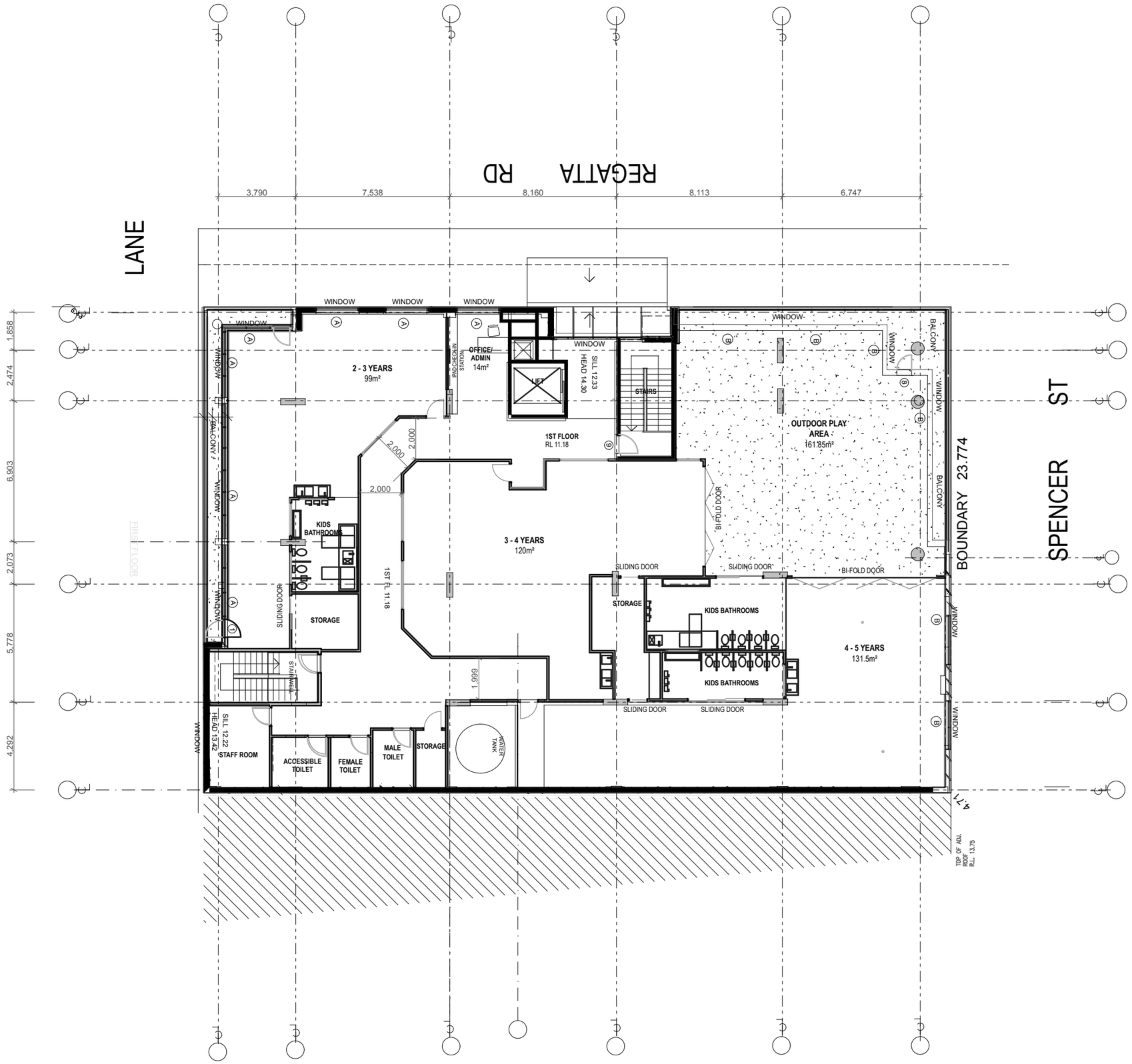
PROJECT
25-27 SPENCER ST. FIVE DOCK

DRAWING
GROUND FLOOR PLAN
REVISION
SD2
1:200 @ A3
28/07/2015



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PROJECT
25-27 SPENCER ST. FIVE DOCK

DRAWING
FIRST FLOOR PLAN
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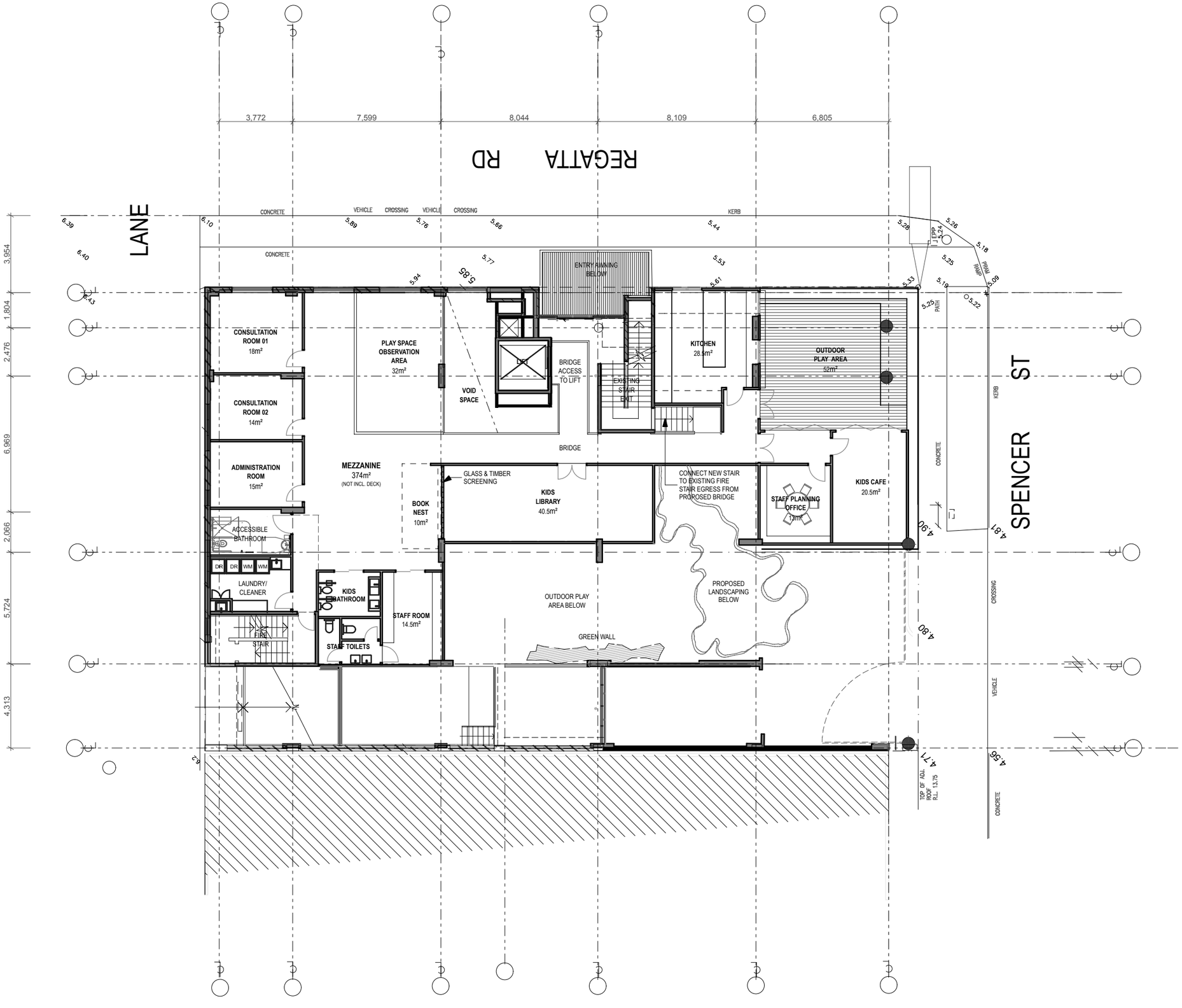

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PROJECT
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REVISION
SD2

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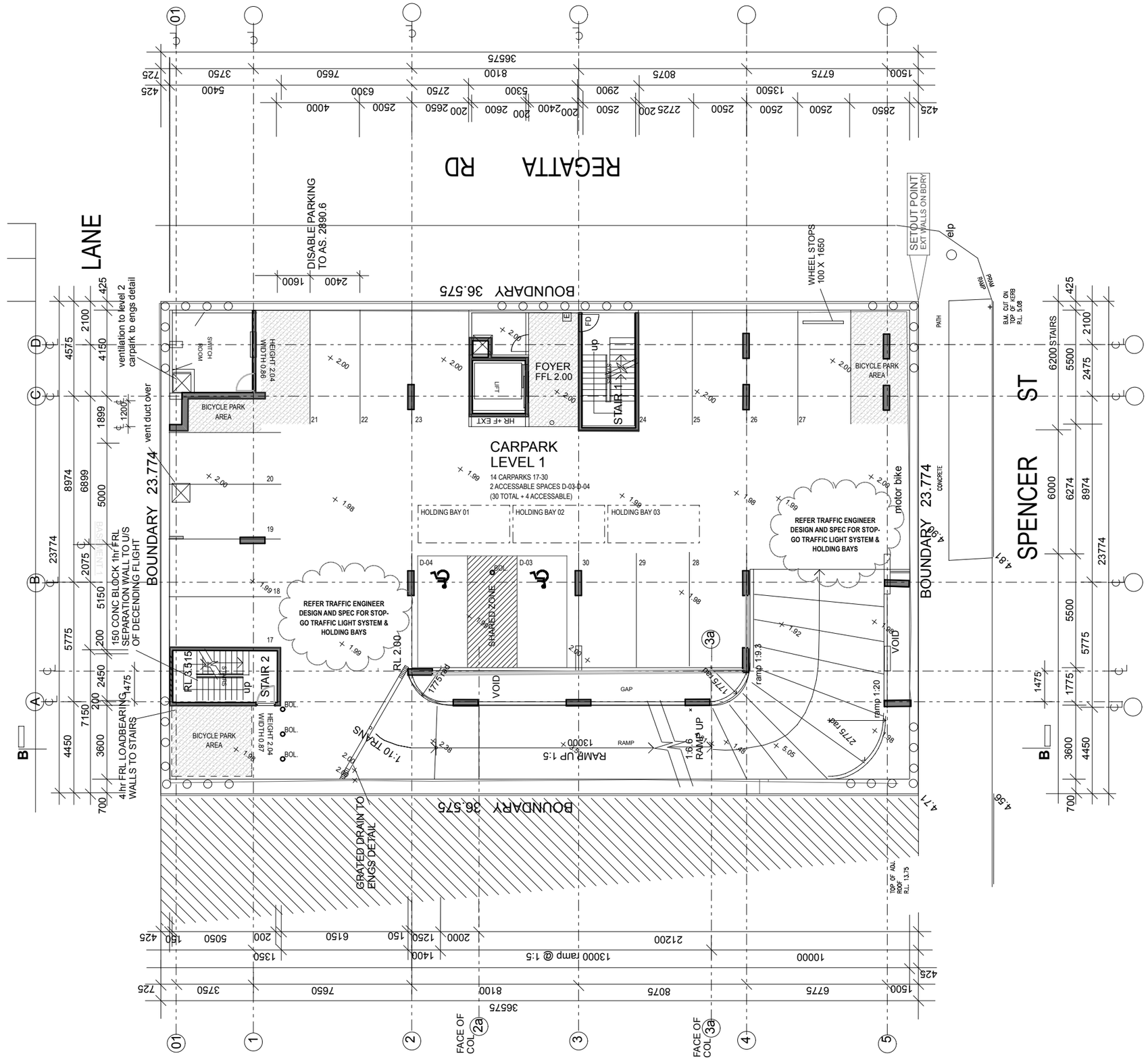

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10 MITCHELL STREET McMAHONS POINT NSW 2060

CLIENT
FADY EL GHITANY
PROJECT
25-27 SPENCER ST. FIVE DOCK

DRAWING
BASEMENT 1 FLOOR PLAN
REVISION
SD2
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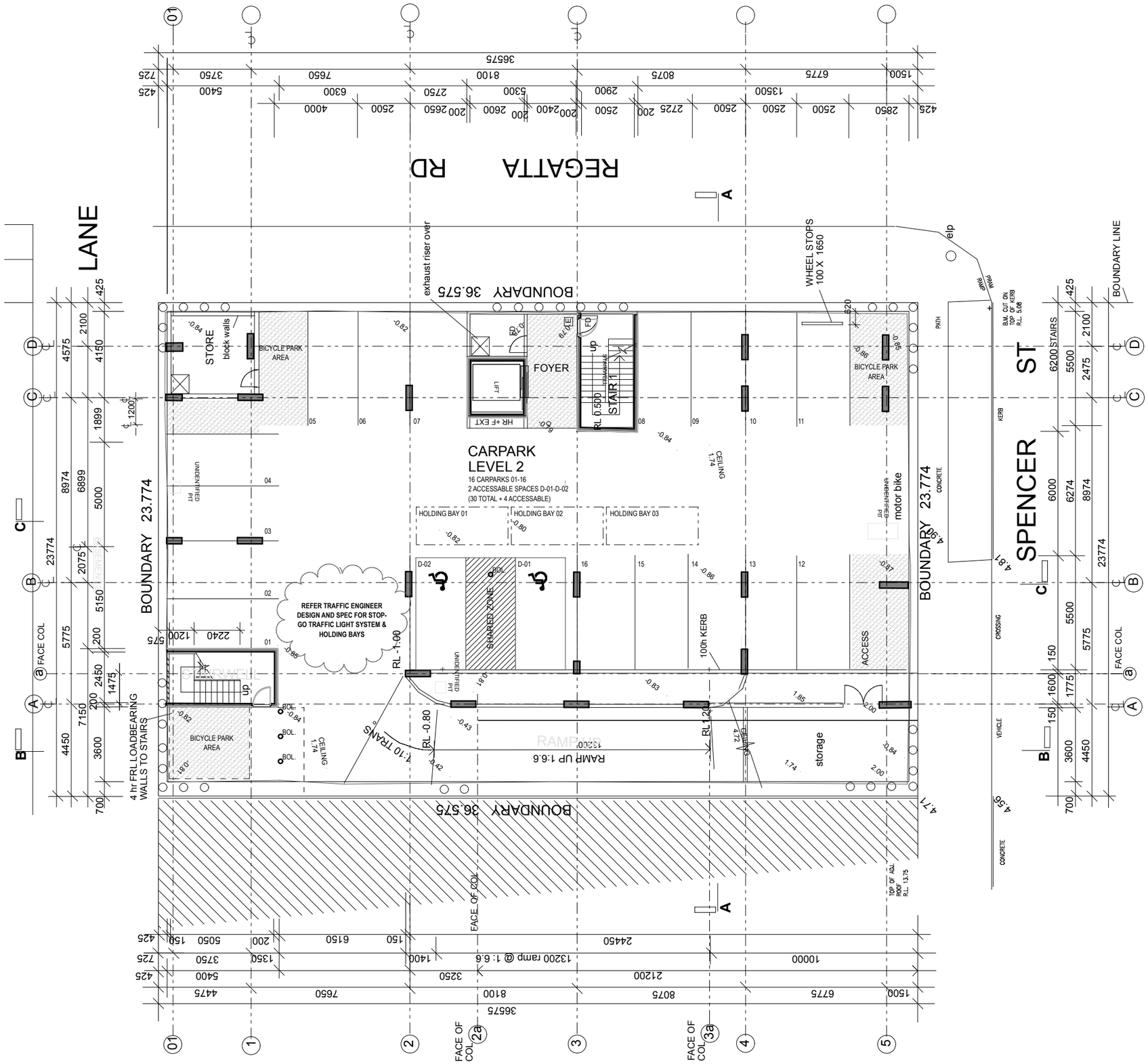

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FADY EL GHITANY
PROJECT
25-27 SPENCER ST. FIVE DOCK

DRAWING
BASEMENT 2 FLOOR PLAN
REVISION SD2
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27/07/2015

Appendix B

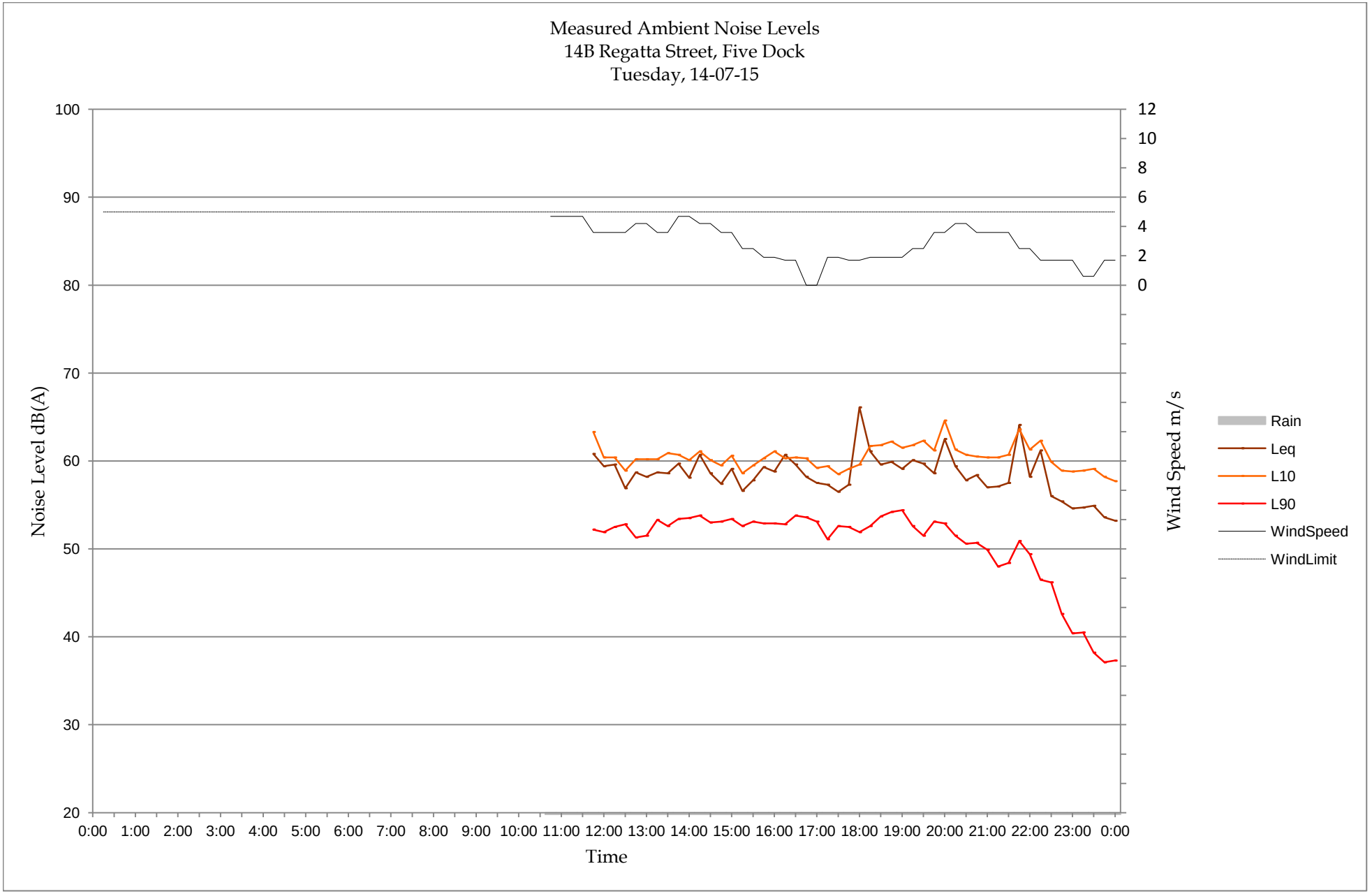
Statistical ambient noise levels

Table B.1 Ambient noise monitoring summary

Date	ABL Day	ABL Evening	ABL Night	Leq 11hr Day	Leq 4hr Evening	Leq 9hr Night
Tuesday, 14-07-15		48	36		60	55
Wednesday, 15-07-15	52	47	35	60	59	55
Thursday, 16-07-15		50			60	
Friday, 17-07-15		49	39		61	56
Saturday, 18-07-15	52			59	59	56
Sunday, 19-07-15						
Monday, 20-07-15	52	47	34	60	58	55
Tuesday, 21-07-15	52	48	36	60	61	56
Wednesday, 22-07-15	52	48		60	60	
Thursday, 23-07-15		48	34		59	56
Friday, 24-07-15	52	47	39	61	59	56
Saturday, 25-07-15	51			60	60	
Sunday, 26-07-15						
Summary Values	52	48	36	60	60	56

Notes:

0 indicates periods with too few valid samples due to weather or logger operation


Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Tuesday, 14-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
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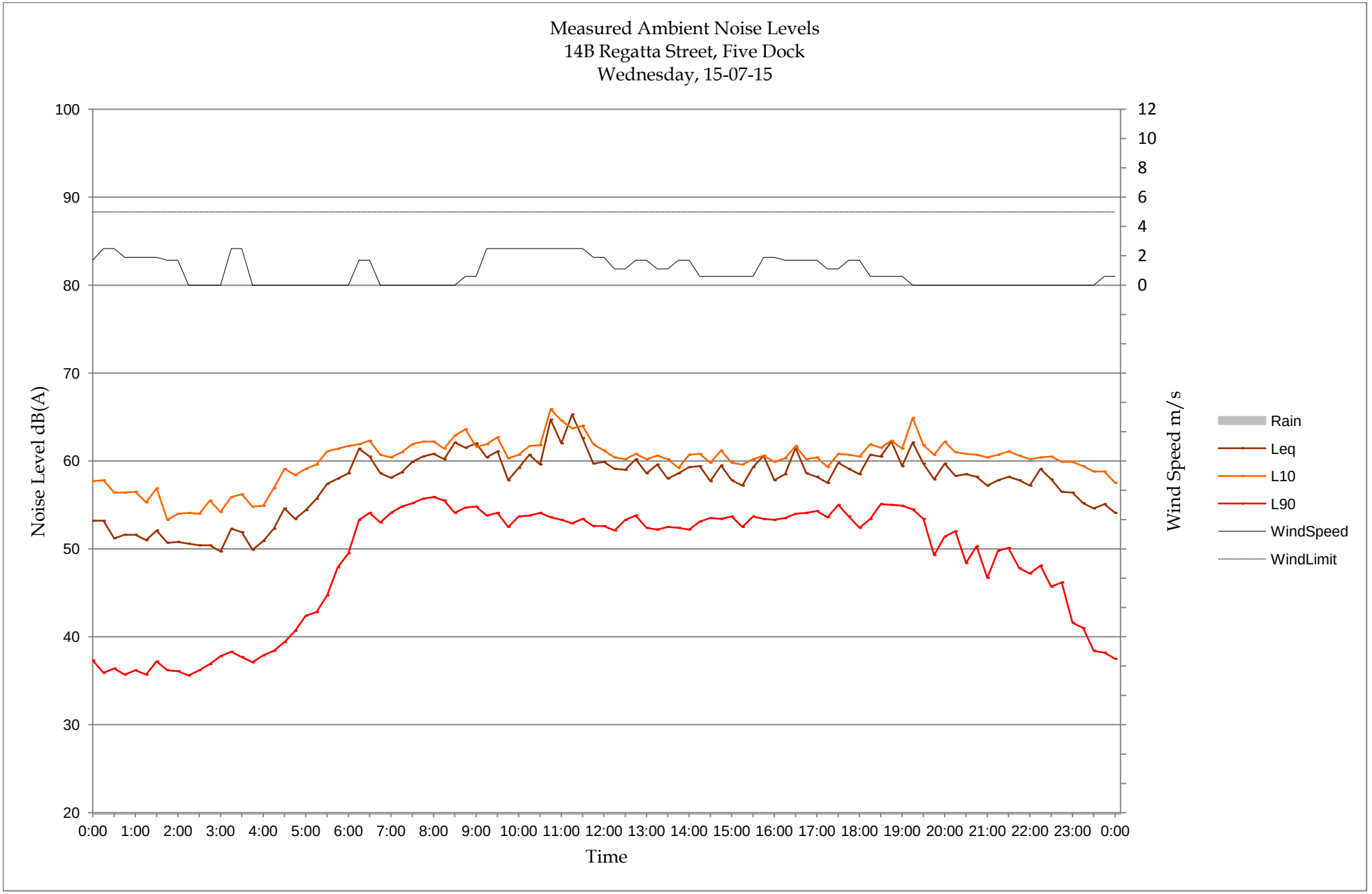
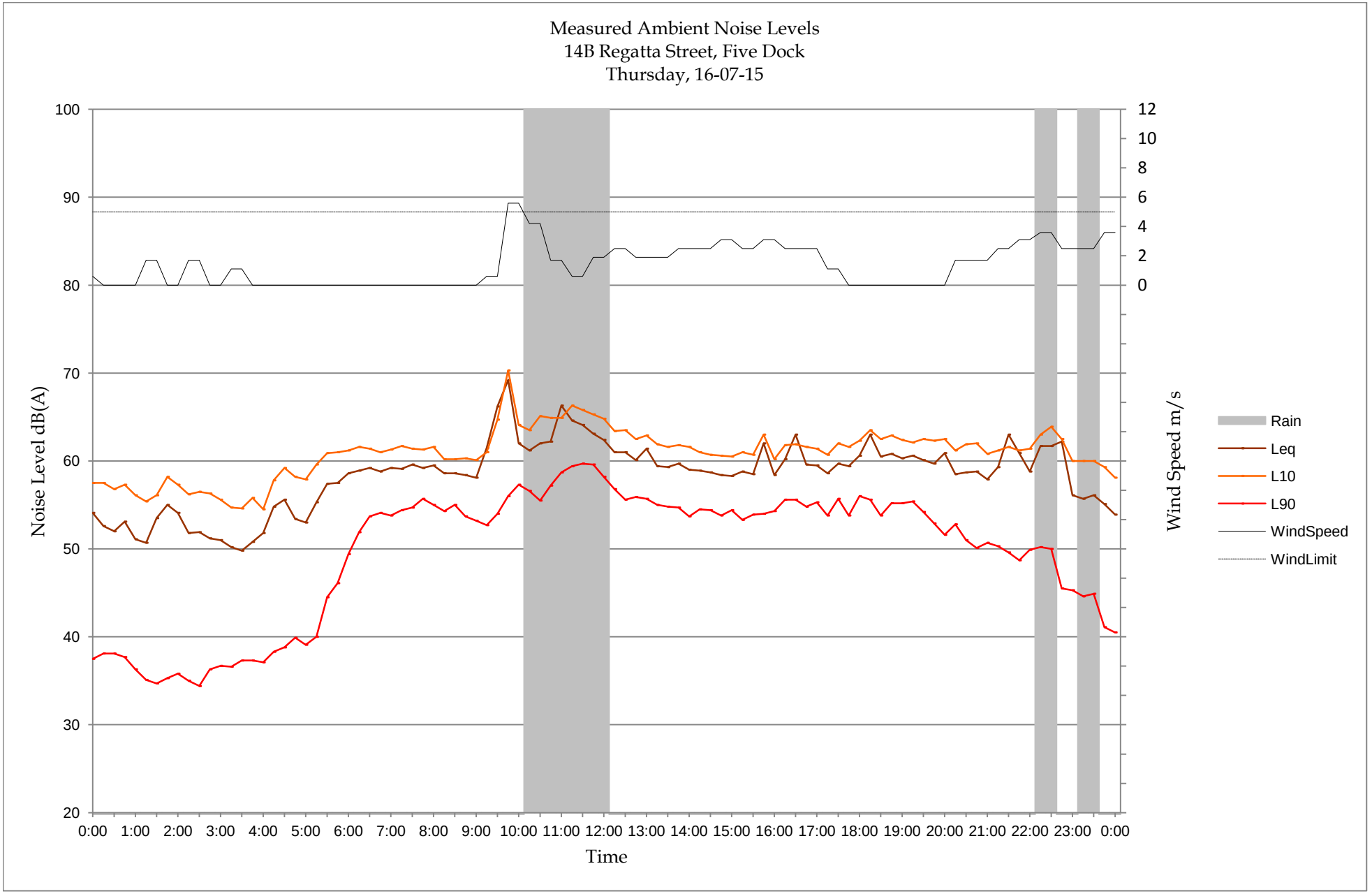
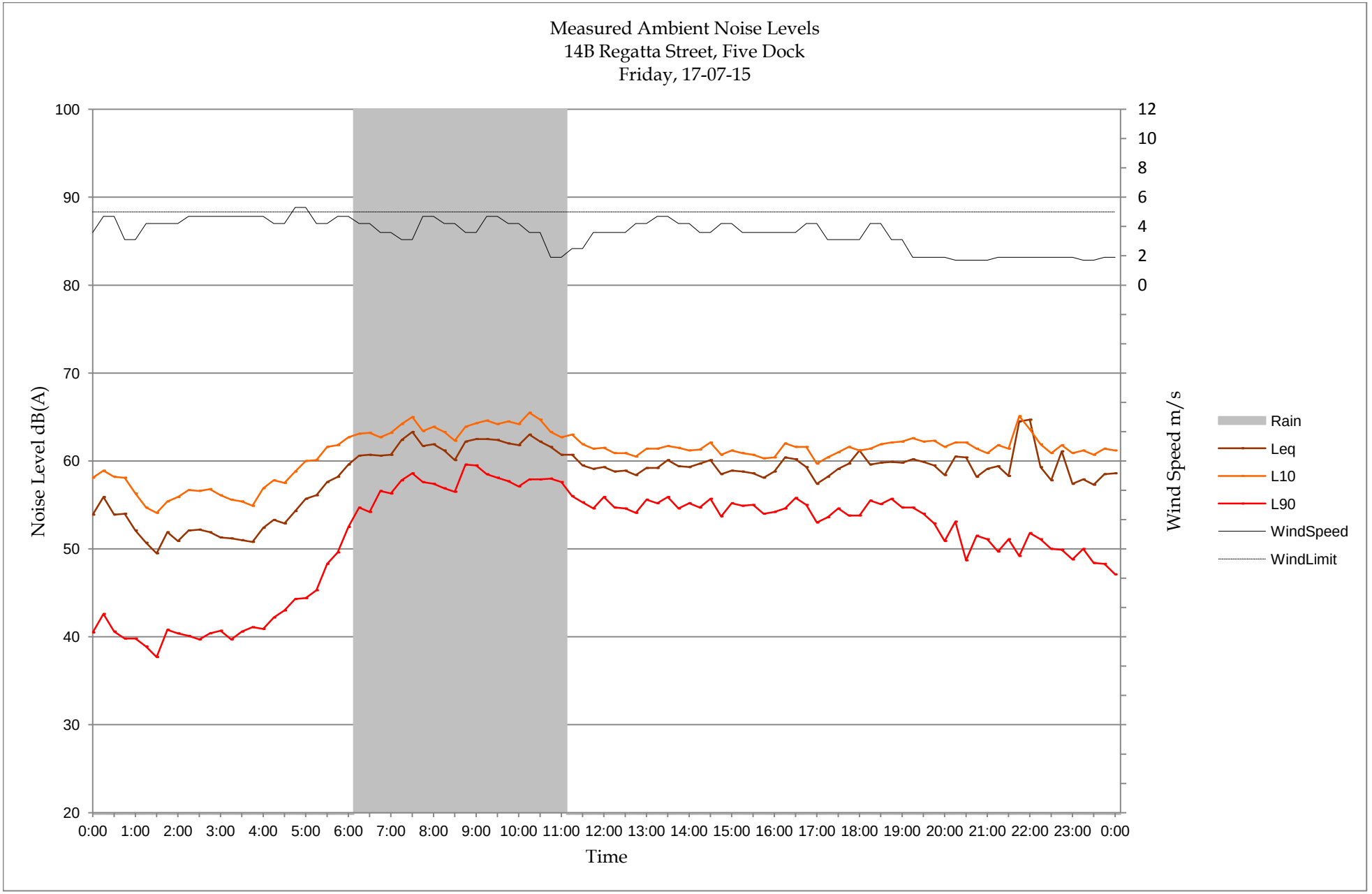
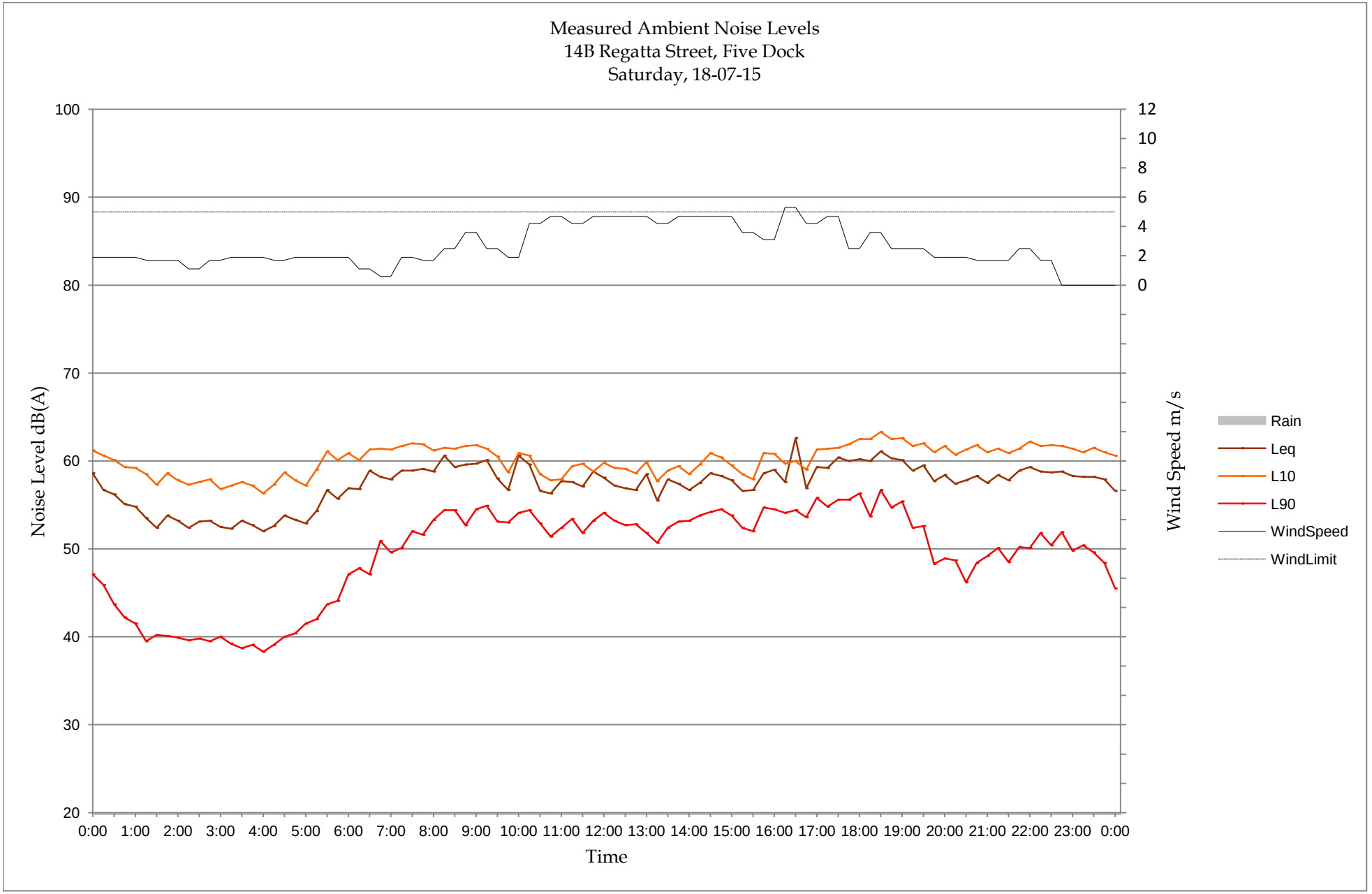
Rain
Leq
L10
L90
WindSpeed
WindLimit


Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Wednesday, 15-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit

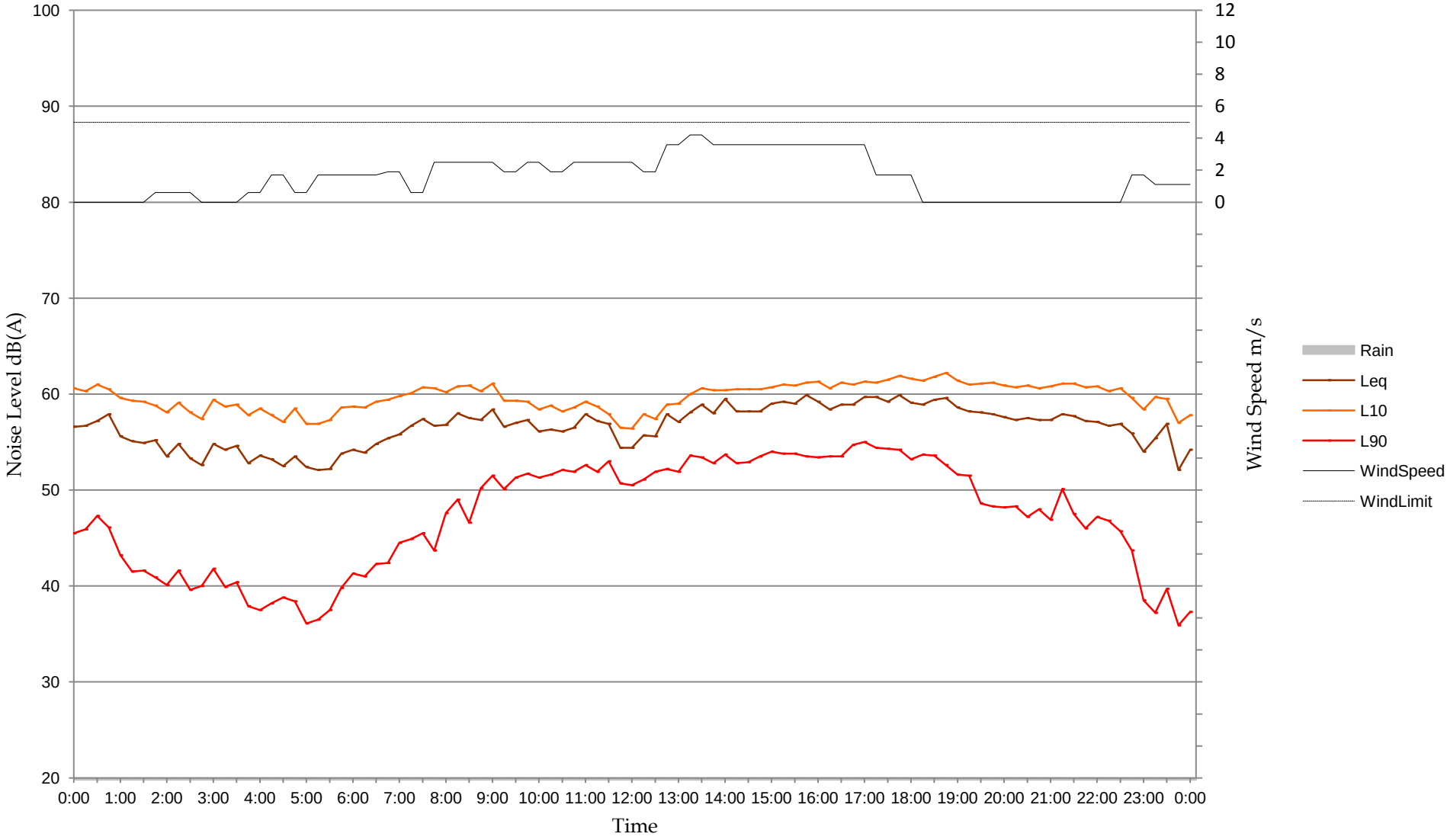

Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Thursday, 16-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit


Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Friday, 17-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit

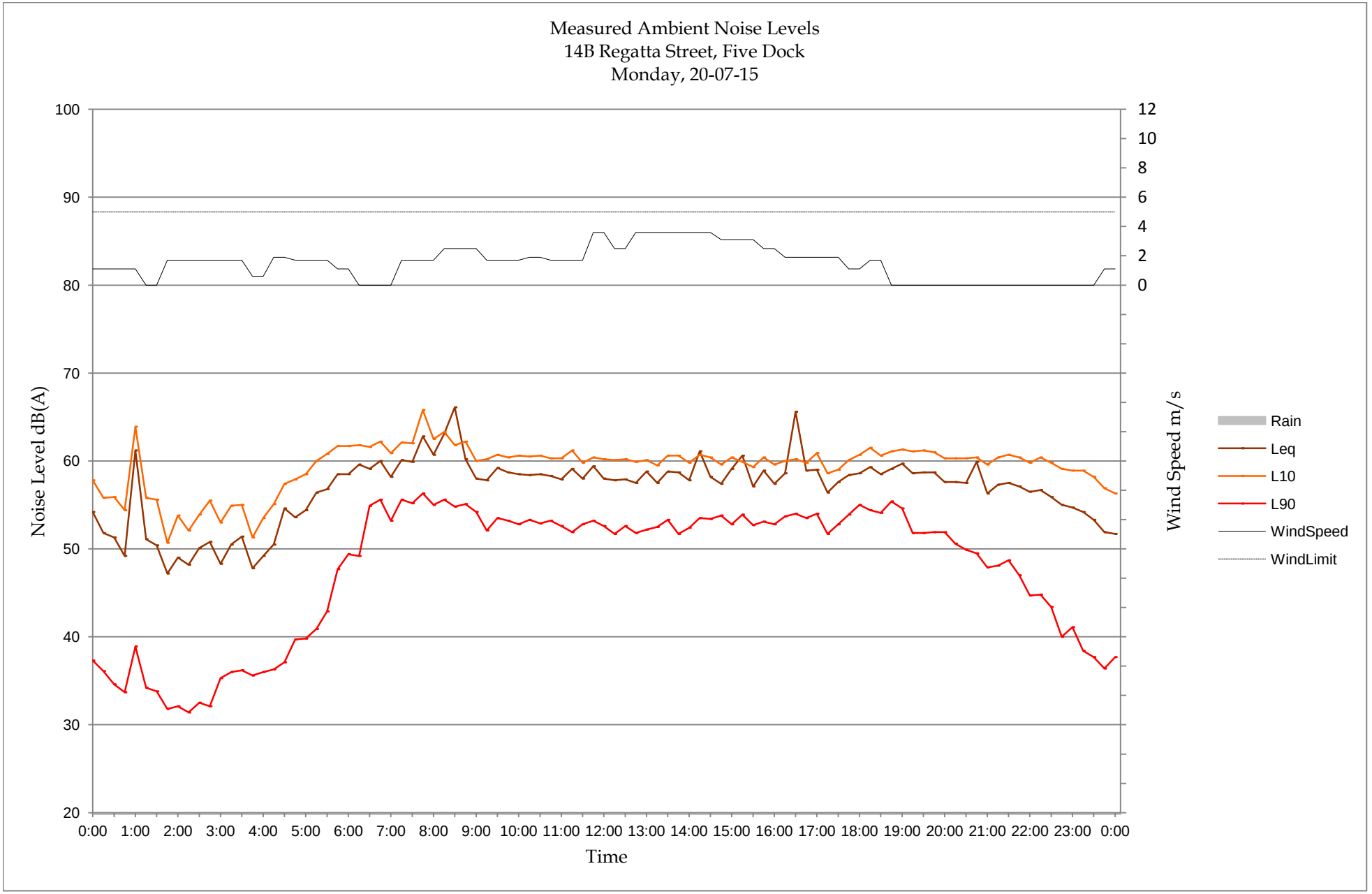
Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Saturday, 18-07-15

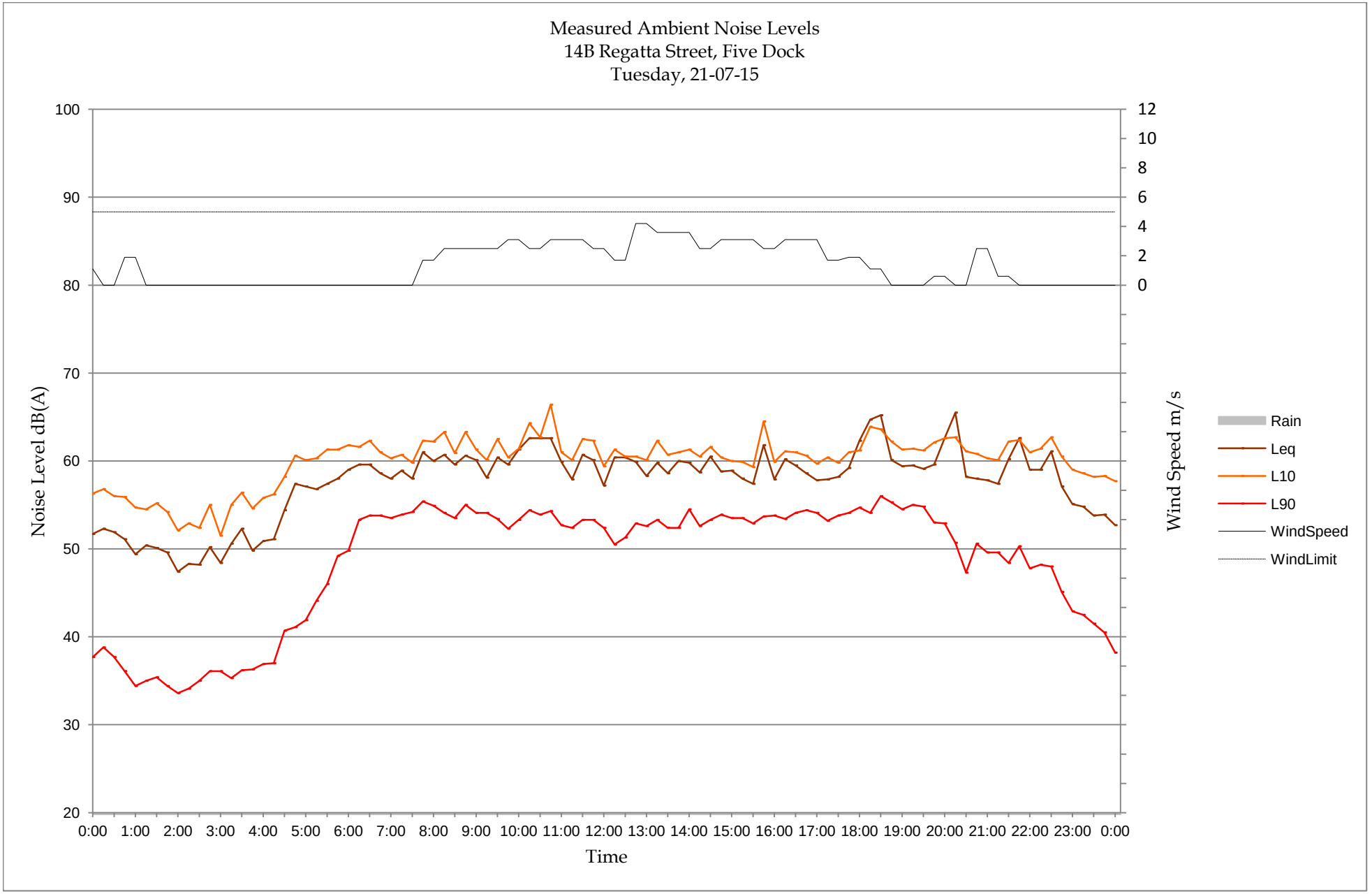


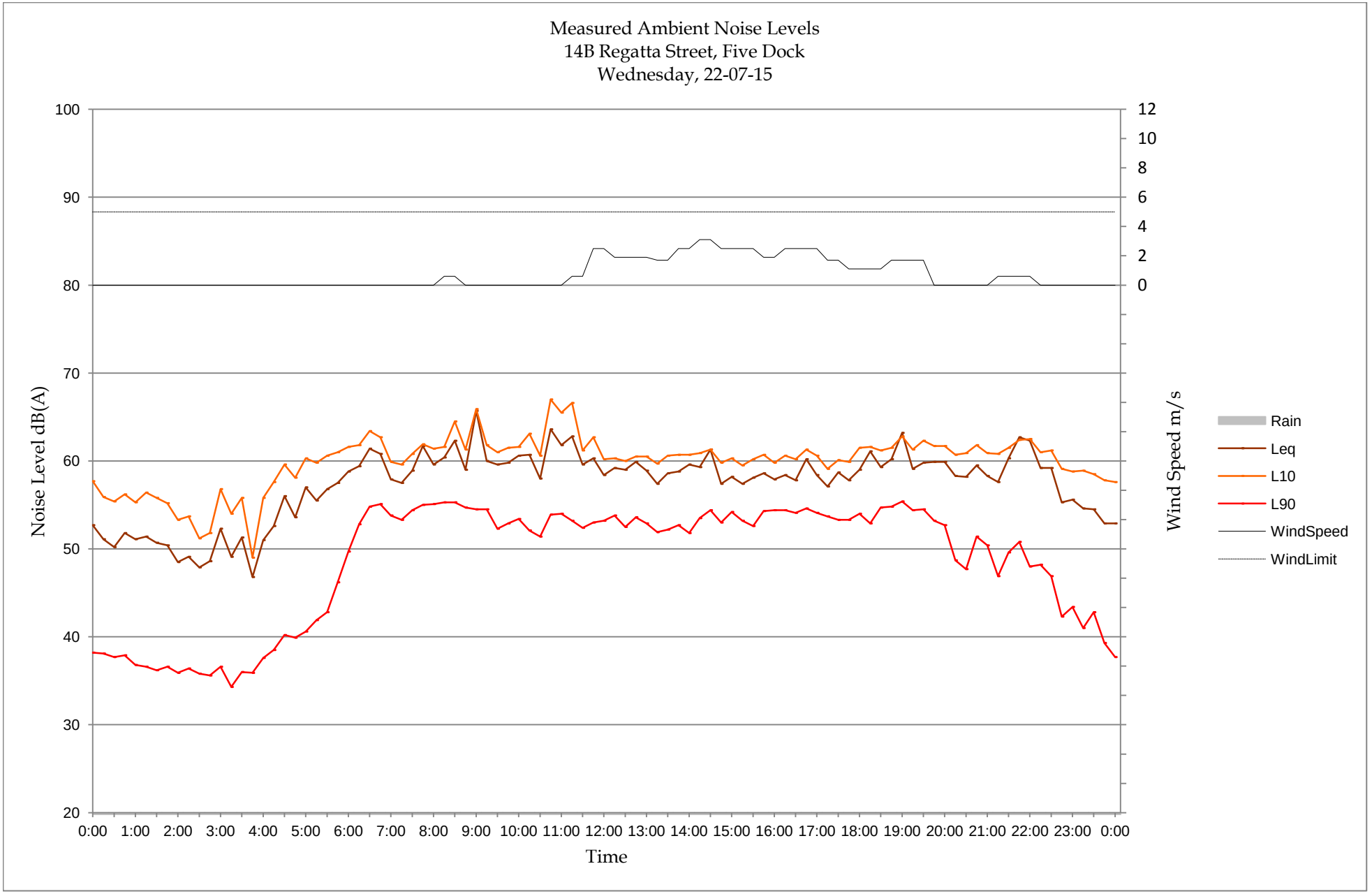
Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Sunday, 19-07-15

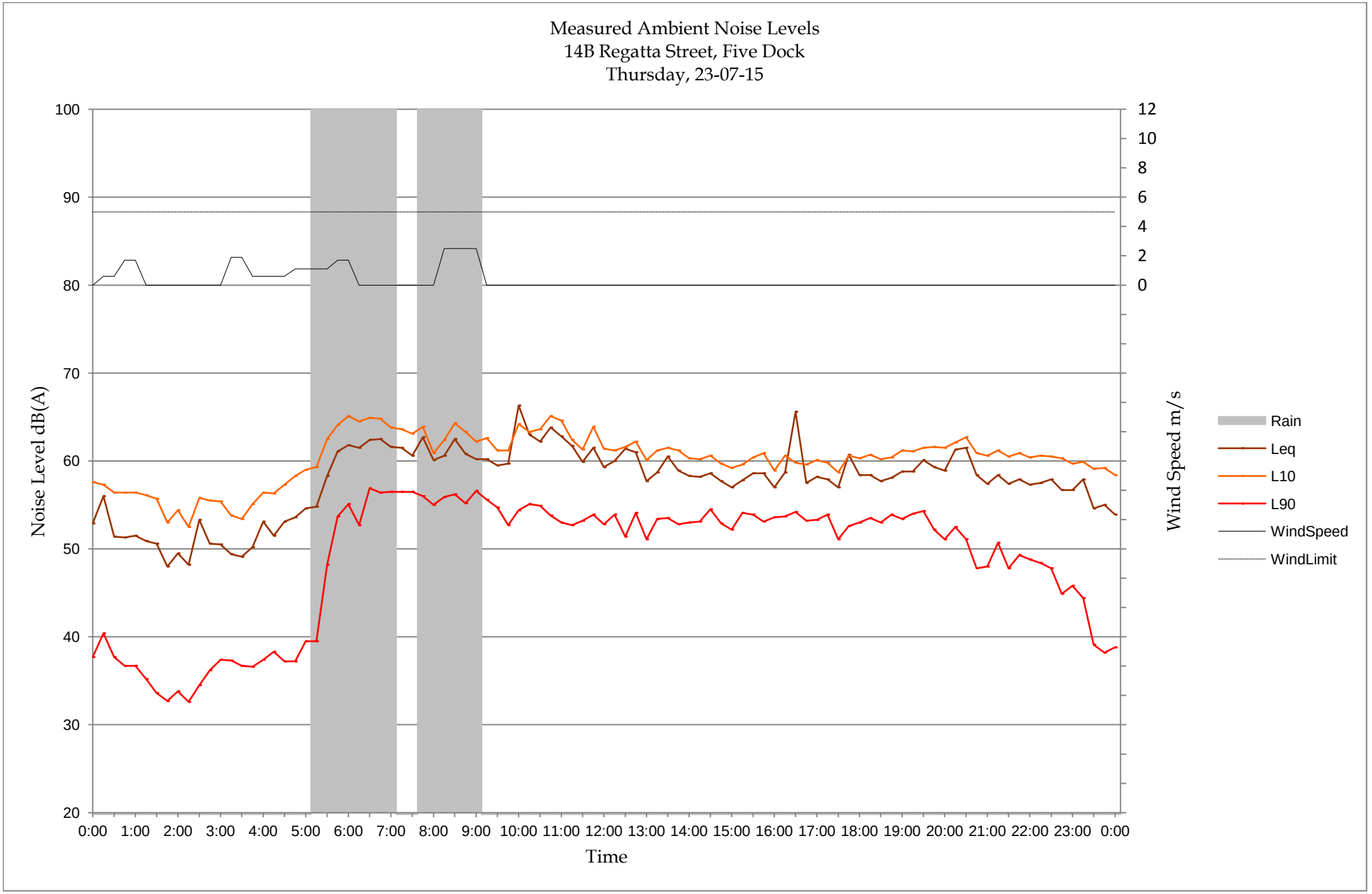


Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Monday, 20-07-15

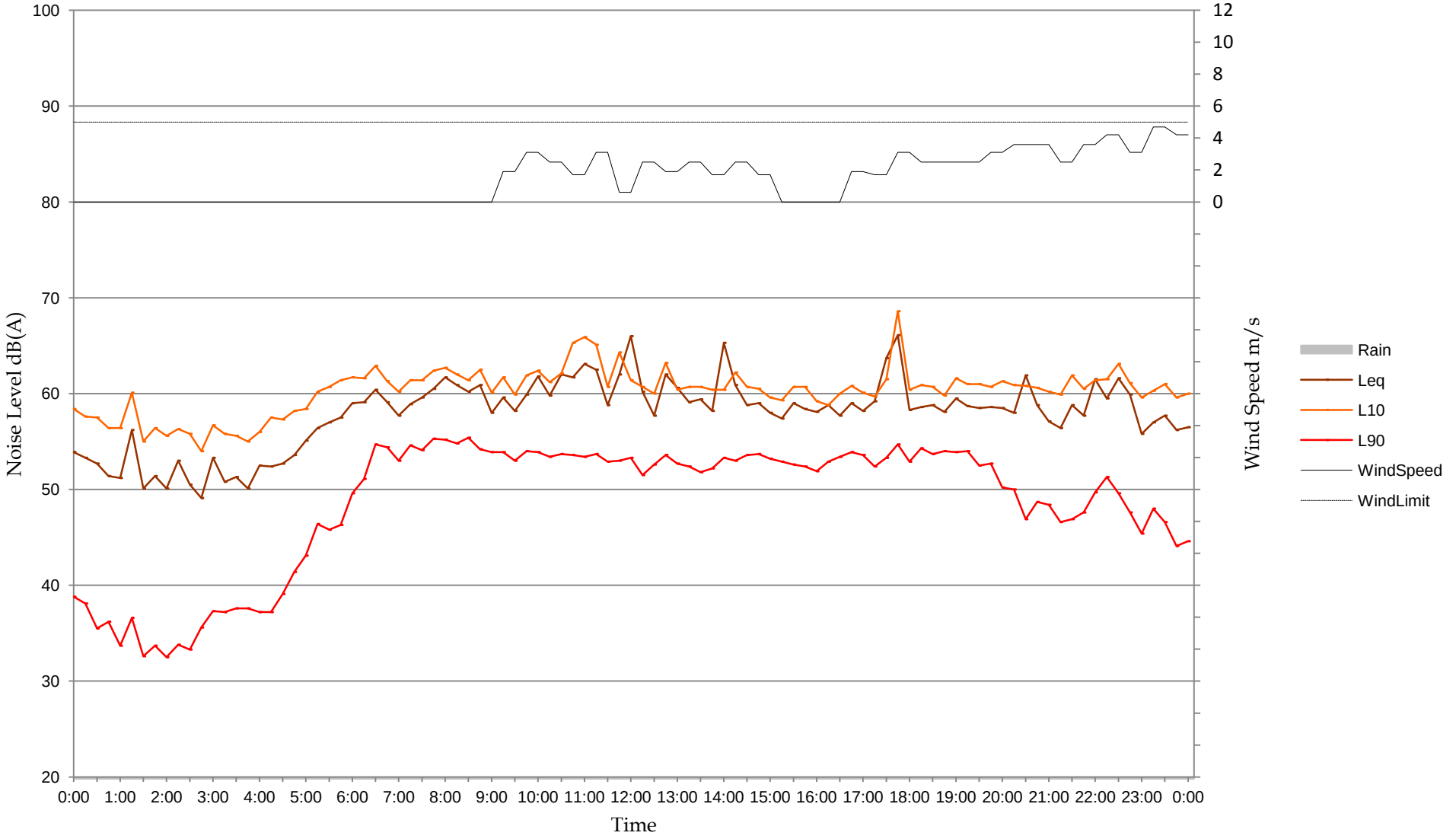


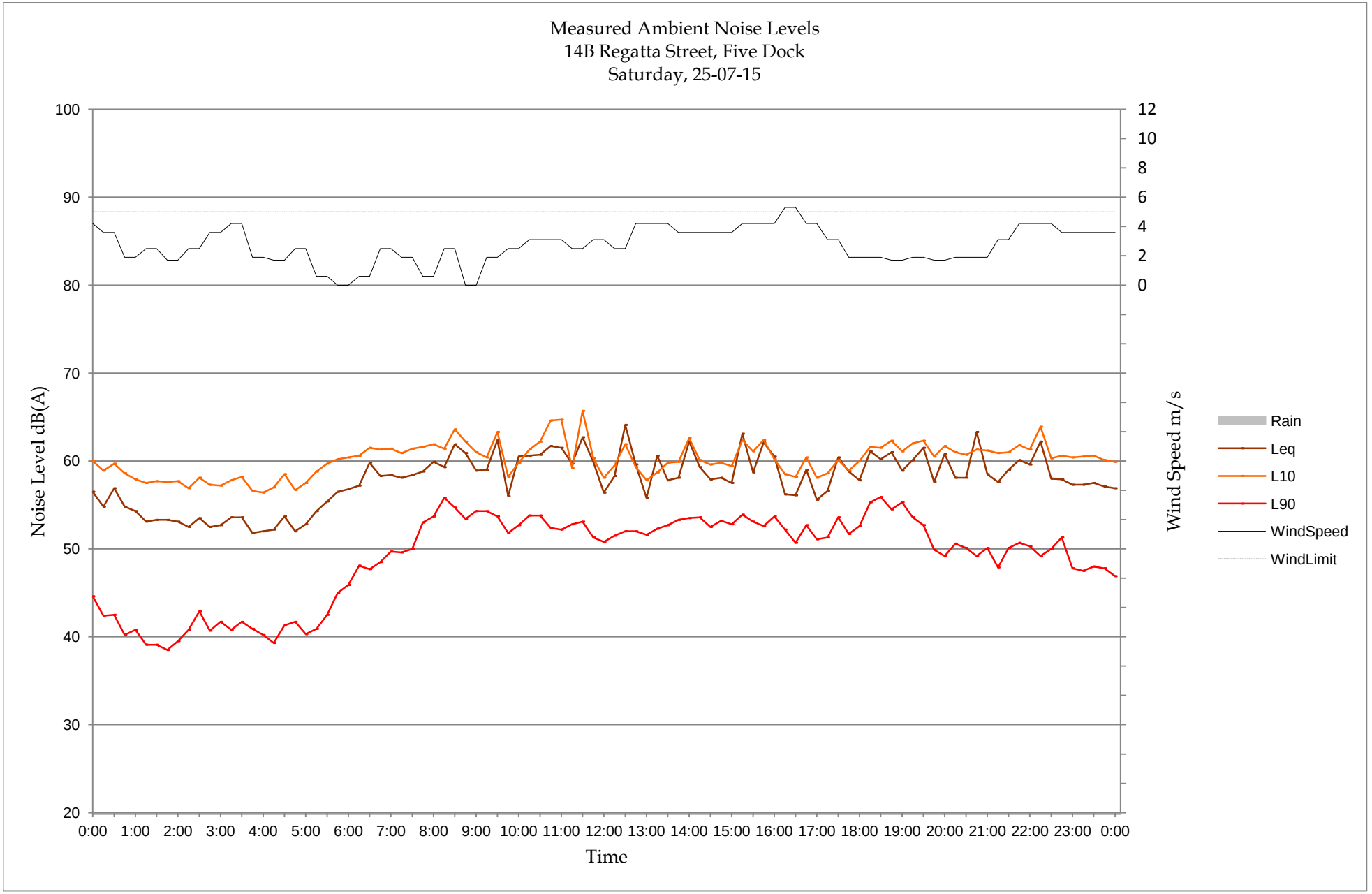

Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Tuesday, 21-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit

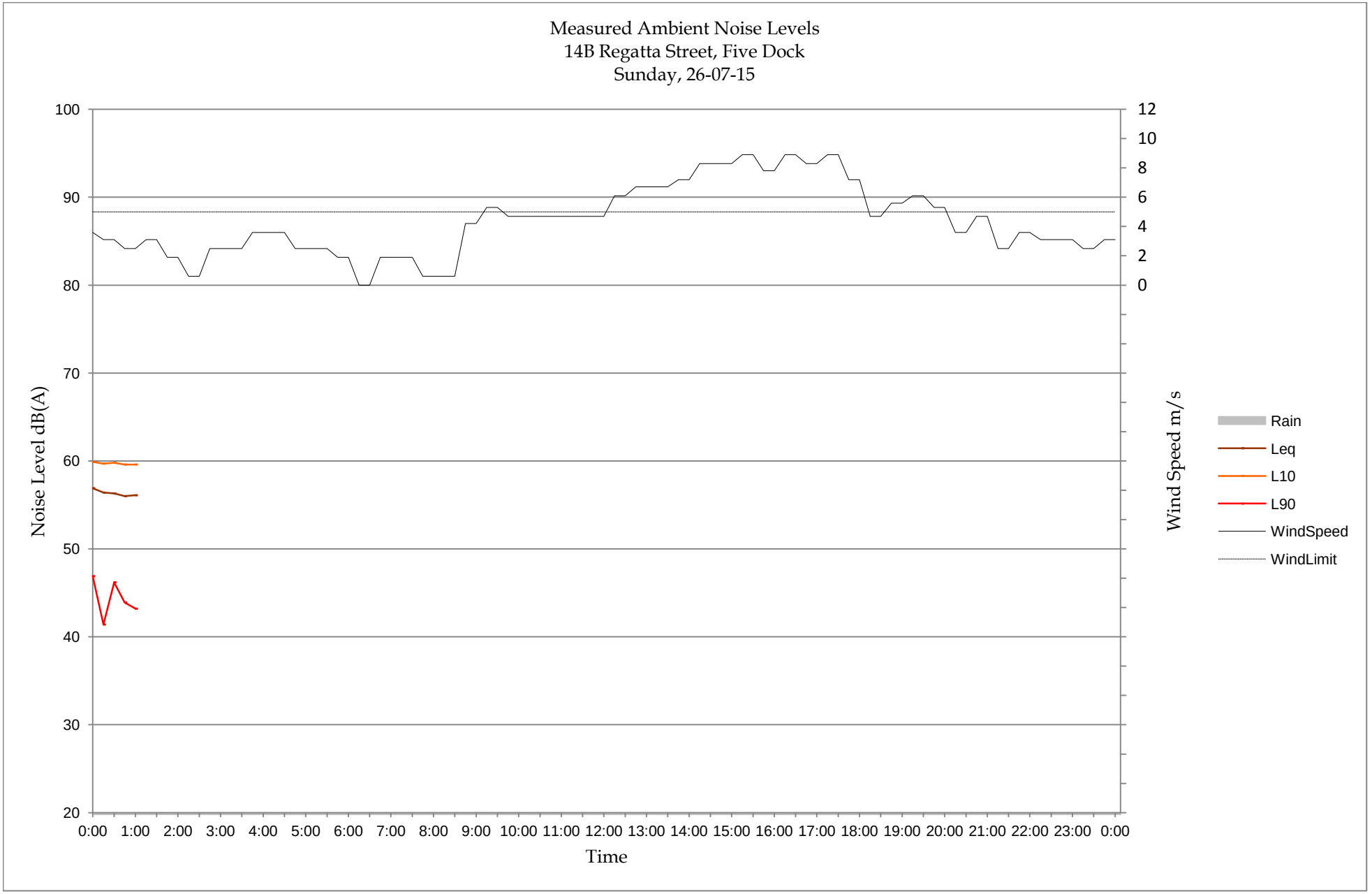

Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Wednesday, 22-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit


Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Thursday, 23-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit

Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Friday, 24-07-15




Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Saturday, 25-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit


Measured Ambient Noise Levels
14B Regatta Street, Five Dock
Sunday, 26-07-15
Noise Level dB(A)
Wind Speed m/s
Time
100
90
80
70
60
50
40
30
20
12
10
8
6
4
2
0
0:00 1:00 2:00 3:00 4:00 5:00 6:00 7:00 8:00 9:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 0:00
Rain
Leq
L10
L90
WindSpeed
WindLimit

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